STATE OF THE DISCIPLINE

Greek Architecture

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Abstract

The study of Greek architecture grew out of the meticulous recording of buildings and their components by 18th- and 19th-century investigators. Although the aims have changed, with an increasing emphasis on historical and social context, the basic methods of documentation remain the same. This essay traces the history of the discipline as a background to modern approaches, geographic emphases, and new perspectives. It surveys the work of archaeological schools and conference bodies, followed by general studies of architecture and its components as well as individual building forms and complexes. A focus is placed on recent literature, from 1980 to the present, and on books rather than articles.*

INTRODUCTION

Many contributions have been made to the field of Greek architecture over the past 30 years. Previously known buildings have received fuller studies, and newly excavated ones have been brought to light. New books provide surveys of Greek architecture or of particular building types and components. The interrelationship of buildings has been mined for information about function and society. Progress has also been made in elucidating the backgrounds of architects and the processes by which they worked.

This article traces these developments with the aims of presenting the current state of the discipline and of giving insights into its future directions. The works cited are by no means comprehensive. Because of the large number of publications, preference is given to books over articles, except for topics for which few books exist. The period considered, from 1980 onward, is admittedly arbitrary and sometimes inconsistent. As a result of these limitations, some important publications are necessarily excluded. It is hoped,

however, that the list of works cited, which is provided at the end of this article, will assist the reader in locating those contributions.

HISTORY OF THE DISCIPLINE

The study of Greek architecture has evolved considerably from its origins in the 18th century, but some of the basic principles have remained the same. It was initiated by architects seeking to preserve a record of monuments of the past and to use them as a source of "good taste" in their own times. They were already familiar with buildings in Rome, but by the 18th century, their interests had shifted to Greece. Stuart and Revett state the reasons for this shift in their 1748 application for financing for what would be the first project sponsored by the Society of Dilettanti. They wanted to make exact drawings of the buildings, since the "beauties of a correct style" that existed in Athens surpassed those of Rome "as much as an original excels a copy," and these, having been "almost completely neglected," must be preserved in drawings for posterity.1

Ancient architecture is no longer seen as a source for contemporary models, although it may still enjoy some interest from practicing architects. This is expressed in the republication of books on topics such as the origin and use of moldings.² There is also an increasing interest in the works of early investigators. A reprint edition of Stuart and Revett's *The Antiquities of Athens* has just appeared,³ and the first English translation of Le Roy's *Les ruines des plus beaux monuments de la Grece* was issued in 2003.⁴ Illustrations of Greek monuments produced by 19th-century French, Danish, and German architects have formed the subject of exhibitions and catalogues.⁵ Some institutions now host digitized versions of early publications that are

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¹ Stoneman 1987, 122; see also Stuart and Revett 2008, v. See Watkin (2006) for a detailed discussion of the intellectual climate that gave rise to these views.

²Walker 2007.

³Stuart and Revett 2008.

⁴Le Roy 2003.

 $^{^5 \}rm See$ Hellmann et al. (1986), Bendtsen (1993), and Bankel (1986), respectively.

long out of print.⁶ These volumes provide valuable documentation both of the material and of previous attitudes toward it.

Additionally, the approach taken by early investigators remains fundamental to the study of Greek architecture. They sought to document the remains of buildings through accurate measurements, drawings, and records of details. Modern scholars continue to accept this as the first step in the analysis of a building.7 German publications provide useful models for this kind of documentation. They typically begin with a thorough exposition of the remains, including descriptions of the elements with lists of preserved fragments in easily readable tables, and present both drawings and photographs of the more important blocks.8 A reconstruction and interpretation of the monument follows. Even scholars whose aim is to offer a new reconstruction or interpretation must necessarily rely on the primary documentation of the building and its elements.9 Thus, publications from the 18th, 19th, and even early 20th centuries, which in other fields would be considered long out of date, continue to be significant for the study of Greek architecture.

One might assume that most Greek buildings, especially those visible to the early investigators, would have been thoroughly documented, but many of these are becoming known for the first time. Thus, despite the initial discovery of the Temple of Apollo at Bassai in the 18th century, ¹⁰ it has only recently received complete analysis: a four-volume publication, three volumes of which (by Cooper) are devoted exclusively to the architecture. ¹¹ The Temple of Nemesis at Rhamnous provides another example. Although the Society of Dilettanti published drawings and measurements

by J.P. Gandy in 1817, the temple was not fully documented and reconstructed until 1989, by Miles. ¹² A similar situation exists with the Late Archaic Temple of Aphaia on Aigina. It was noted already in 1797, in the second volume of *Antiquities of Ionia*, and was the subject of several investigations over the years. Yet its thorough documentation, with detailed drawings, plans, and architectural analysis by Bankel, only appeared in 1993. ¹³ Similarly, von Freeden's 1983 book on the Tower of the Winds in Athens, one of the best-preserved Greek buildings in the city, relied on the drawings of Stuart and Revett, ¹⁴ while a new study of that structure by Kienast is set to appear presently. ¹⁵

In western Greece (South Italy and Sicily), the circumstances are comparable, albeit more striking. Despite the "rediscovery" of the temples at Paestum by 1746, ¹⁶ the Temple of Hera II, once thought to be dedicated to Poseidon, lacks a monographic study. ¹⁷ The complete documentation of the Temple of Hera I (the so-called Basilica) was published by Mertens in 1993. ¹⁸ For the other temple, that of Athena, we rely on the 1959 exposition of Krauss, which is thorough in its description and reconstruction but, in keeping with its time, more limited in regard to architectural context. ¹⁹ Additionally, the important and relatively well-preserved temple at Segesta in Sicily only received full publication, again by Mertens, in 1984. ²⁰

Although thorough investigations of the Hera I and Segesta temples were long delayed, the recent studies offer models for their kind. Mertens' approach is comprehensive, providing not only the expected descriptions, measurements, and drawings but also discussions of western Greek buildings of similar date. He thus creates a context for the primary subject, while also of-

⁶As in the case of Ross et al. (1839), which is hosted by Ruprecht-Karls-Universität Heidelberg (http://digi.ub.uni-heidelberg.de/diglit/ross1839). *AntDenk* is also available from this site (http://digi.ub.uni-heidelberg.de/diglit/ad1891/0086), as are certain other publications.

⁷Gruben (2007, ⁵4–5) cites R. Koldewey's maxim that an ancient building is not entirely known if not measured and drawn, which holds true even today.

⁸The publications of temples on Aigina provide a good example of this methodology (Schwandner 1985; Bankel 1993; see also the *Alt-Agina* volumes, such as those by Hoffelner 1996, 1999). The first two books are published by Walter de Gruyter and the other group by Philipp von Zabern.

⁹E.g., Norman's (1984) reassessment of the Temple of Athena Alea at Tegea used the documentation and observations of the building in earlier publications and unpublished papers, in addition to her own discoveries.

¹⁰The temple was first reported and drawn in the 18th century by a French architect, J. Bocher, and next explored by C.R. Cockerell and C. Haller von Hallerstein in 1811, as noted by Dinsmoor 1933, esp. 204–5.

¹¹For the architecture, see Cooper 1992, 1996a, 1996b. For a volume on the sculpture, see Madigan 1992.

¹²Society of Dilettanti 1817. In her study, Miles (1989, 139–40) discusses the history of investigations.

¹³ Society of Dilettanti 1797, 16–19, pls. 2–8 (labeled Temple of Jupiter Panellenius). The temple was described by Fiechter in Furtwängler (1906), but Bankel (1993) offers a more complete study in accord with contemporary standards. For the history of excavations and publications, see Bankel 1993, 1–3.

¹⁴von Freeden 1983.

¹⁵Kienast (forthcoming).

 $^{^{16}}$ See Chiosi et al. (1986, esp. 18, 19, 23), where it is noted that travel guides only began to include Paestum at the beginning of the 19th century.

¹⁷ A detailed study of all three temples was planned by Krauss, but he was only able to complete one (Krauss 1959), as explained in Mertens 1993, xi.

¹⁸Mertens 1993.

¹⁹Krauss 1959.

²⁰ Mertens 1984.

fering valuable information about structures that have yet to receive a more complete publication.

Even buildings that were well studied in the past have benefited from new investigations. In particular, work carried out on the Acropolis in conjunction with its restoration project has yielded much new information, which is set out in several publications. Many of these focus on the Parthenon, despite the already large body of scholarship on the subject. Seven volumes, some in two or three parts, plus additional books (in Greek) provide the results of detailed studies, accompanied by numerous drawings and photographs. ²¹ This work has also generated articles on specific discoveries, perhaps the most striking of which are windows that once flanked the doorway,²² alterations that are interpreted as reflecting the substitution of the Ionic frieze for one originally planned as Doric, and the possible execution of a second frieze in the pronaos.²³ The process of construction is detailed in two books by Korres.²⁴ Other books have appeared that provide an overview of the building or its restoration.²⁵

These renewed investigations of the Parthenon seem, in turn, to have inspired other scholars, to judge from the number of publications produced in recent years. Pedersen offers an intriguing proposal for Corinthian, rather than Ionic, columns in the rear room. An argument has also been made that the Ionic frieze was part of the original design. The sculpture has received particular attention. In 1993, Palagia published a book on its pedimental sculpture. Casts of the metopes in Basel have allowed for a new study. Three books have appeared in recent years devoted solely to the Parthenon frieze, including one by Neils, who then turned her attention to editing a multiauthor volume on the context, sculptures, and historiography of

The Propylaea has likewise received numerous publications of late. These include the results of studies conducted for the restoration project as well as the project itself. ³⁴ A two-volume set by Tanoulas, the architect in charge of the current restoration project, details the post-Antique periods of the building. ³⁵ Fairly contemporaneously with these works, de Waele published his own metrological analysis of the Mnesiklean design. ³⁶ That contribution was followed by the long-anticipated and thorough study of the classical building by Dinsmoor and Dinsmoor. ³⁷

Studies for restoration were also undertaken on the adjacent Temple of Athena Nike, and the results were published with detailed text and plates.³⁸ Mark's analysis of the building phases of the sanctuary, which traced the development of the temple, altar, and statue base, had appeared the previous year.³⁹ The condition of the Erechtheion demanded that it be the first to undergo restoration, with the result that the documentation produced for that building precedes the chronological limits of this discussion. 40 Further elucidation by the architect of the restoration, Papanikolaou, was delayed by his untimely death. A short article by Papanikolaou, however, along with essays by others involved in the Acropolis restoration project, is available in a general book.⁴¹ A second book on the Acropolis restorations has also recently appeared from the Greek Ministry of Culture.42

The archaic buildings on the Acropolis have likewise come under examination. The first volume in the Dinsmoor study of the Propylaea, which examined the

the Parthenon.³¹ The overall sculptural program and its significance have been the subject of additional books.³² Conferences have also profiled various aspects of the Parthenon.³³

²¹ The seven volumes may be divided into separate parts. They are listed here in consecutive order: Korres and Bouras 1983 (vol. 1); Korres et al. 1989 (vol. 2a); Korres 1989 (vol. 2b); Koufopoulos 1994 (vol. 3a); Zambas 1994 (vol. 3b); Skoulikides 1994 (vol. 3c); Korres 1994b (vol. 4); Toganides 1994 (vol. 5); Parasche and Toganides 2002 (vol. 6); Papakonstantinou et al. 2002 (vol. 7). Additional studies appear outside the series: Toganides and Matala 2002; Zambas 2002a; Zambas 2002b.

²²Korres 1984.

²³Korres 1994a.

²⁴Korres 1995, 2000.

 $^{^{25}\,\}mathrm{Tournikiotis}$ 1994; Korres et al. 1996; see also articles in Economakis 1994.

²⁶Pedersen 1989.

²⁷Barletta 2009.

²⁸ Palagia 1993.

²⁹Berger 1986.

³⁰ Jenkins 1994; Berger and Gisler-Huwiler 1996; Neils 2001.

³¹ Neils 2005.

³² Lagerlöf 2000; Cosmopoulos 2004; Jenkins 2007. Although the book by Boardman (1985) includes a general discussion of other aspects of the building, it is primarily concerned with the sculpture.

³³Berger 1984. Hoepfner (1997) includes papers on other monuments, but the Parthenon is by far the main building discussed.

 $^{^{34}}$ Tanoulas et al. 1994; Tanoulas and Ioannidou 2002; Ioannidou 2007. In addition, Tanoulas has published important articles on the building (e.g., Tanoulas 1996).

³⁵Tanoulas 1997.

³⁶de Waele 1990.

³⁷ Dinsmoor and Dinsmoor 2004.

³⁸ Giraud 1994.

³⁹Mark 1993.

⁴⁰ Platon 1977.

⁴¹ Economakis 1994. See Papanikolaou (1994) for his discussion of the restoration of the Erechtheion.

⁴² Ioannidou et al. 2008.

archaic predecessor, or Old Propylon, was published already in 1980.⁴³ Nevertheless, controversy still surrounds the appearance of that building.⁴⁴ A recent book by Kissas examines roof tiles, metopes, geisa, and acroterion bases on the Acropolis.⁴⁵ From the working of certain members, along with other evidence, he revives the argument that the H-architecture originally stood on the Dörpfeld foundations. A reexamination of the geisa of the small poros buildings is currently underway.⁴⁶ In addition, scholars have written on the supports for votive dedications from the Acropolis, which often take an architectural form and thus provide important information about the development of capitals and bases in the Archaic period.⁴⁷

These detailed studies of architecture follow in the tradition set by the early investigators; that is, they begin with extensive documentation and illustrations, which form the basis of their reconstructions. Yet the recording of remains is no longer the final goal of architectural studies. In their publications, contemporary authors are more concerned than their predecessors with elucidating the historical context of the building. While this broader analysis typically accompanies the primary exposition of remains, it may be developed further by other scholars who rely on that initial documentation.

The Acropolis has been a particularly popular subject for these secondary studies. The results of recent investigations have been incorporated into several new books. That by Brouskari offers a handy and well-illustrated overview. Hurwit's 1999 book examines the monuments, cults, and history of the Acropolis from the Neolithic period to the present, While his second, shorter publication focuses on the Periclean period. Holtzmann considers the Acropolis from the Archaic and Classical periods to post-antiquity. Even more broadly, a recent book by Schneider and Höcker moves from the monuments themselves to their political and social significance in both ancient and modern times. Even modern times.

GEOGRAPHIC CONCERNS

Architectural studies have traditionally been weighted toward certain regions of the Greek world. This may be ascribed in part to the attitudes inherited from 18th-century investigators such as Stuart and Revett. They gave priority not only to Greece over Rome but also to mainland Greece (particularly Athens) and Ionia over Greek cities elsewhere.

The importance of Athenian monuments had justified the first expedition under the auspices of the Dilettanti and the publication of their initial series of four volumes and a later supplement of *Antiquities of Athens*. Subsequent expeditions were made to the Greek settlements of Asia Minor, resulting in five volumes entitled *Antiquities of Ionia*. The members stated the reasons for their interest in Asia Minor and for the order of investigations at the beginning of the first volume of their publication, noting that this area was "perhaps, after Attica, the most deserving the attention of a classical traveler," for both its intellectual and architectural achievements. Such statements echoed the opinions of ancient sources, on whose authority investigators of this period largely relied.

The emphasis given to sites considered historically and/or culturally significant meant that only limited investigations were carried out in other parts of the Greek world. This legacy has continued, even within mainland Greece. Modern excavators have begun to change this situation, however, with surprising results. German excavations at Kalapodi (Phokis), for example, have brought to light a sanctuary of Artemis and Apollo that offers important evidence for early architecture.⁵⁶ An apsidal, semiperipteral temple from Ano Mazaraki (Achaea)⁵⁷ and a temple in Metropolis (Thessaly) with an unusual column count in its peristyle and carved decoration on its Doric capitals⁵⁸ both challenge the accepted canons of Greek temple architecture. Among the most remarkable discoveries in recent years, for both their architecture and their painted decoration, are Macedonian tombs.⁵⁹

⁴³Dinsmoor 1980.

⁴⁴ See the alternate reconstructions proposed for the pre-Mnesiklean entrance to the Acropolis by Eiteljorg (1995) and Shear 1999.

⁴⁵ Kissas 2008.

⁴⁶ This is being conducted by Klein (1991a, 2007, 2008), who has presented her findings at several annual meetings of the Archaeological Institute of America.

 $^{^{47}}$ Kissas (2000) includes these in his study and notes previously unpublished pieces. See McGowan (1997) for a discussion of the Ionic capitals and their architectural significance.

⁴⁸Brouskari 1997.

⁴⁹ Hurwit 1999.

 $^{^{50}\,\}mbox{Hurwit}\,2004$ (designed for students but useful to all).

⁵¹ Holtzmann 2003.

⁵²Schneider and Höcker 2001.

⁵³ Stuart and Revett 1762, 1787, 1794, 1816, 1830, 2008.

⁵⁴ Society of Dilettanti 1797, 1821, 1840, 1881, 1915. See a summary of these missions in Society of Dilettanti (1915, xi, 1–7, 25) and a discussion of the work of the society by Kopff 1996.

⁵⁵Society of Dilettanti 1821, iii–iv.

⁵⁶ The discoveries at the sanctuary are being published by the German Archaeological Institute (DAI) in the series *Kalapodi: Ergebnisse der Ausgrabungen im Heiligtum der Artemis und des Apollo von Hyampolis in der antiken Phokis*.

⁵⁷Petropoulos 2002.

⁵⁸Intzesiloglou 2002.

⁵⁹ For a discussion of those at Vergina, see Andronikos (1984) and, more recently, Borza and Palagia 2007. For Mace-

The Greek sites of South Italy and Sicily likewise inspired little interest from the early investigators, for the same reasons. Only one western Greek temple, that of Zeus Olympios at Akragas, was included in the publications of the Dilettanti. Significantly, it had received praise from both Polybius (9.27.9) and Diodorus Siculus (13.82.1–4). This building appeared, however, in the last, supplementary volume of the Antiquities of Athens, which was published in 1830 with the addition to the title and other places in Greece, Sicily, etc. 60 Its aim was to include details of temples that had not been adequately published in the earlier volumes. Neglect of this region was compounded by the creation of archaeological schools, which reflect the boundaries of the modern countries and are typically housed in their capitals or major cities. For Italy, this means Rome, with its own traditions rooted in the cultures of the Etruscans and ancient Romans.

Although certain architects and archaeologists, especially those of the German Archaeological Institute (DAI), have turned their attention to western Greece, its architecture has not been the basis of as many studies or of such long-term projects as buildings in the modern country of Greece or even in Asia Minor. As a result, scholars seeking details of western Greek buildings have long had to rely on 19th-century publications. That of Koldewey and Puchstein remains important for its authoritative documentation of structures then known in both South Italy and Sicily.⁶¹ Even now, this two-volume set is invaluable for its drawings and measurements. It has only recently been matched by Mertens' book, which provides a comprehensive, well-illustrated, up-to-date resource for both temples and other buildings in this region.⁶²

The Aegean Islands have also been largely overlooked by scholars of Greek architecture for some of the same reasons. Vitruvius was unaware of its contributions to the origins of the Ionic order and so, accordingly, were the early investigators. Excavations and examinations of remains by Gruben and the Institut für Bauforschung und Baugeschichte of the Technische Universität München (TUM) have brought to light

the significant—and distinctive—architectural traditions of these islands. Final reports of their work are now being published. Two books have appeared on Parian architecture, one on the fifth-century Temple of Artemis and another on Hellenistic architecture, while yet a third volume has been produced on marble roofs from the Aegean. Gruben's own studies have been published in numerous chapters and articles, among the last of which was a lengthy exposition of architecture from Naxos and Delos. Gruben.

In recent years, archaeologists have begun to explore previously inaccessible or more distant parts of the Greek world. Albania has attracted considerable attention. A recent book details the investigations of the French mission at the site of Apollonia and the various public and private constructions that were uncovered. 65 The Black Sea is another promising area for research. A study of architectural forms from the northern part of this region demonstrates stylistic and historical connections with specific cities elsewhere in the Greek (and later Roman) world. 66

ARCHAEOLOGY AND ARCHAEOLOGICAL SCHOOLS AND INSTITUTES

The expansion of archaeology in the 19th century had a profound impact on the study of Greek architecture. Investigations of buildings moved from the realm of the architect to that of the archaeologist, ⁶⁷ a situation that is still true today. Investigators may be, and often are, trained as architects, but their approach is now historical and scholarly. The TUM is especially well known for offering this dual training.

Archaeological investigations have played a major role in the elucidation of Greek architecture. The foundation of the Greek state in 1831 led to the establishment in Greece of the Archaeological Service and of the Archaeological Society at Athens, followed by permanent archaeological schools representing major European and North American nations. ⁶⁸ The French School at Athens was the first, in 1846. ⁶⁹ Germany, the United States, Britain, and Austria followed, establishing their presence still within the 19th century. The

donian tombs more generally, see Miller 1993.

⁶⁰ Stuart and Revett 1830.

⁶¹Koldewey and Puchstein 1899.

⁶² Mertens 2006.

⁶³ See Schuller (1991), Müller (2003), and Ohnesorg (1993), respectively.

⁶⁴ Gruben 1997.

⁶⁵ Dimo et al. 2007.

⁶⁶Bujskich 2010.

 $^{^{67}\}mathrm{See}$ the discussion by Gruben (2007, 32–65) on the development of the discipline.

⁶⁸Excellent discussions of the background and activities of

the foreign schools in Greece are provided in two very similar volumes by Korka (2005, 2007). For a list of schools and their dates of inception, see the website of the American School of Classical Studies at Athens (http://www.ascsa.edu.gr/index.php/About/otherlinks). Here, the date for the Austrian Archaeological Institute is given as 1908, but its own website says 1898 (http://www.oeai.at/index.php/history-of-the-institute.html).

⁶⁹ de Grummond 1996a. Gruben (2007, 48) notes that the École Française d'Athènes was established in 1846, and its excavations at Delos and Delphi began in 1873 and 1892, respectively.

number of foreign archaeological schools in Greece has expanded over the years to 17, with the most recent being the Belgian School at Athens (2003). These institutions not only sponsor excavations but also promote scholarly studies of excavated or visible remains. Many maintain publication series devoted specifically to those excavations, as well as journals or books with a more comprehensive mission.

Thus, the French School produces separate series for a number of sites in addition to a monograph series for the work of its members in Greece. Its website provides online access to many of these publications. Those concerning Delos—its first excavation, which began in 1873—are published under the title *Exploration archéologique de Délos*. Several volumes of this series have appeared in recent years, including that on the theater (vol. 42), one with illustrations and additional commentary of architecture presented in earlier publications (vol. 36), another on the Sanctuary of the Syrian Gods (vol. 35), and one on the Oikos of the Naxians (vol. 33). Remains from the site are summarized in a very useful guide, now in its fourth (and expanded) edition. Remains from the stream of the spanded) edition.

Although Delphi was the site of the second French excavation in Greece, its publication series, *Fouilles de Delphes*, began slightly earlier (1902) than the series on Delos. Volume two, devoted to topography and architecture, is divided into several fascicules, two of which have appeared since 1980. One of these elucidates the Terrace of Attalos I,⁷³ and the other, the Siphnian Treasury.⁷⁴ Guidebooks of both the site and the museum offer general information and bibliography on the monuments.⁷⁵

The expansion of French investigations in Greece into new geographic locations has inspired additional publication series. That entitled *Études péloponnésiennes* is devoted to work in the Peloponnesos, particularly at Argos. Recent volumes include one on the nymphaeum of its agora and another on the hypostyle hall.⁷⁶ A broader study of sanctuaries and cults in Arcadia also appears in this series.⁷⁷ The theatral monuments

of Argos, which range from the fifth century B.C.E. to the fourth century C.E., are treated in a guidebook from *Sites et monuments*. Thasos has also received its own series, *Études thasiennes*, but none of the recent volumes is concerned with architecture. A very informative guidebook, now in its second edition, covers various aspects of the site as well as the museum. The second second second second edition of the site as well as the museum.

As the title of the series *Bibliothèque des Écoles fran- çaises d'Athènes et de Rome* indicates, these monographs are not limited to the study of Greece. Nevertheless, some recent volumes have been concerned with this area and its architecture. In particular, volume 278 in the series offers a very useful discussion of the vocabulary employed for Greek architecture, at least as it is known from Delos. ⁸⁰ Volume 263 documents the investigation of Tenos, particularly at its Sanctuary of Poseidon and Amphitrite. ⁸¹

The mission of the French School at Rome has been directed to ancient Italy and its various cultures, especially that of the Romans. Its work on Greek architecture has thus been much more limited than that of its counterpart in Athens.82 Excavations begun in 1949 at Megara Hyblaia (in Sicily) have yielded several volumes over the years, including a recent one on the innovative urban plan.83 A guidebook to the site was published in the early 1980s.84 Work has also been carried out at Paestum, with several volumes profiling the architecture in both the Greek and Roman periods.85 The archaeological interests of the French School at Rome in South Italy and Sicily are represented by the Centre Jean Bérard, a joint foundation with the Centre National de la Recherche Scientifique (CNRS). The Centre Jean Bérard produces its own publication series, of which some volumes focus on architecture.86

The DAI has established several branches in the Mediterranean region. The section in Athens has a long history of excavation and publication in Greece, which continues to the current day.⁸⁷ Its work at Olympia is chronicled in articles published in the series *Bericht über die Ausgrabungen in Olympia*, some of which include architecture. Another series, *Olympische*

⁷⁰ http://cefael.efa.gr.

⁷¹See Fraisse and Moretti (2007), Fraisse and Llinas (1995), Will (1985), and Courbin (1980), respectively.

⁷²Bruneau and Ducat 2005.

⁷³Roux 1987.

⁷⁴Daux and Hansen 1987.

⁷⁵ Amandry 1991; Bommelaer and Laroche 1991; Bommelaer 1007

⁷⁶ Bommelaer and des Courtils 1994; Marchetti and Kolokotsas 1995.

⁷⁷ Jost 1985.

⁷⁸ Moretti and Diez 1993.

⁷⁹ Grandjean and Salviat 2000.

⁸⁰ Hellmann 1992.

 $^{^{81}}$ Volume 263 was published in two parts: Braun and Étienne 1986; Étienne 1990.

⁸² Richardson 1996.

⁸³ Gras et al. 2004.

⁸⁴ Vallet et al. 1983.

⁸⁵ For Greek architecture, see Greco and Theodorescu 1983

⁸⁶A recent example is Bernabò Brea 1986.

⁸⁷de Grummond 1996b.

Forschungen, has recently presented studies of both terracotta roofs at Olympia⁸⁸ and their sculptural decoration.⁸⁹ Excavations at Samos are documented in a series by that name, of which several volumes of late have been concerned with architecture. These include studies of the Hellenistic gymnasium,⁹⁰ the North Building and its sanctuary,⁹¹ the water tunnel designed by Eupalinos,⁹² and the columns of each of the two great dipteral temples.⁹³ Another site investigated by the DAI is the Kerameikos cemetery in Athens, whose eponymous series has yielded three volumes on architecture since 1980.⁹⁴

Other work by German archaeologists in Greece has included the Temple of Aphaia on Aigina. Separate volumes have appeared in recent years on the two phases of the temple in *Denkmäler antiker Architektur*. The results of investigations on Naxos and Paros are included in volume 18 of this same series, under the title *Architektur auf Naxos und Paros*. Two parts have appeared so far. February 18 of 18

As already discussed, the DAI in Rome maintains an interest in both Roman and Greek (South Italian and Sicilian) remains. Its former architect and director, Mertens, has taken a leading role in investigations at Metapontum and Selinous,⁹⁷ both of which are extensive and involve scholars of other nations.98 Work at the latter site is being published in a number of volumes of which the first, on the city and its walls, was issued recently.99 This, as well as institute publications of the houses and the theater at Soluntum, 100 appear in the Sonderschriften series of the DAI Rome. We have already noted Mertens' books on the fifthcentury temple at Segesta and the archaic Temple of Hera I at Paestum, both of which are in the same series. The Sonderschriften reflect the broad purview of this institution and therefore focus on many other topics as well. Similarly, Greek architecture is occasionally represented among the varied subjects of the articles and supplementary volumes published by its journal, Mitteilungen des Deutschen Archäologischen Instituts, Römische Abteilung. 101

Through its department in Istanbul, the DAI investigates Greek sites in Asia Minor. It is currently carrying out excavations at Didyma, Miletos, Pergamon, and Priene. Work at Miletos is published in the series *Milesische Forschungen*, of which one volume is devoted to the Sanctuary of Athena. 102 Proceedings from a 1999 symposium on early Ionia, also in this series, include a number of important papers on architecture. 103 A recent publication of the *Altertümer von Pergamon* series examines Hellenistic Greek (as well as Roman) houses. 104 Priene has also received attention with a new guidebook to the site 105 and a forthcoming book on buildings in the Sanctuary of Athena. 106

The Berlin headquarters of the DAI bears editorial responsibility for many of the series mentioned, as well as others. Within the second group, Archäologische Forschungen (AF) has published several volumes lately that are concerned with Greek architecture. These include the books already cited on architectural forms of the northern Black Sea area, 107 archaic components from the Athenian Acropolis, ¹⁰⁸ and Hellenistic architecture on Paros, 109 as well as one on Island-Ionic and Eastern-Ionic altars. 110 Architectural ornament from Hellenistic Asia Minor is explored in the series Beiträge zur Erschliessung hellenistischer und kaiserzeitlicher Skulptur und Architektur. 111 Certainly the greatest focus on architecture is to be found in Diskussionen zur archäologischen Bauforschung, although the material is not limited to the Greek world.

Work of the American School of Classical Studies at Athens is also well documented by recent books. The school began excavations at Corinth in 1896, with the first volume on the site published in 1929. To commemorate this work, the *Corinth* series recently issued a centenary publication, with papers on topics that included early architecture and sanctuaries. ¹¹² An earlier contribution to the series, volume 18, focuses on the

⁸⁸ Heiden 1995.

⁸⁹ Moustaka 1993.

⁹⁰ Martini 1984.

⁹¹ Furtwängler and Kienast 1989.

⁹²Kienast 1995.

⁹³ Hendrich 2007; Hellner 2009.

⁹⁴ Koenigs et al. 1980; Kovacsovics 1990; Knigge 2005.

⁹⁵ Schwandner 1985; Bankel 1993.

⁹⁶These publications are listed as vols. 18(1) and 18(2), respectively (Schuller 1991; Ohnesorg 1993).

⁹⁷For Metapontum, see Mertens 1985.

⁹⁸ E.g., the agricultural territory of Metapontum has been the focus of work by Carter. See his discussion of this project in Carter 2006.

⁹⁹ Mertens 2003.

¹⁰⁰See the publications of the houses by Wolf (2003) and of the theater by Wiegand 1997.

¹⁰¹An example is Mertens-Horn 1988.

¹⁰²Held 2000.

¹⁰³Cobet et al. 2007.

¹⁰⁴ Wulf 1999.

 $^{^{105}\,\}text{Rumscheid}$ 1999.

 $^{^{106}\}mathrm{Hennemeyer}$ (forthcoming).

¹⁰⁷ Bujskich 2010.

¹⁰⁸ Kissas 2008.

¹⁰⁹ Müller 2003.

¹¹⁰ Ohnesorg 2005.

¹¹¹Rumscheid 1994.

¹¹² Williams and Bookidis 2003.

Sanctuary of Demeter and Kore, with part 3 covering its topography and architecture. ¹¹³ Long-term excavations at another site, the Athenian Agora, have produced a new guidebook, ¹¹⁴ a conference, ¹¹⁵ and three recent volumes devoted to architecture. These last focus on the lawcourts, the remains beneath the Stoa of Attalos, and the city Eleusinion. ¹¹⁶ Although results of the first major excavation, at the Argive Heraion, were published long ago, the American School has now undertaken a new series, *Argive Heraion*, designed to provide up-to-date documentation of the site. The first volume, on the architecture of the classical temple, has now appeared, and the second, on its sculpture, is in progress. ¹¹⁷

Results of the affiliated excavations at Nemea, which were revived by the University of California (UC) at Berkeley, are being presented in an eponymous series from UC Press. There are currently two volumes on architecture. The first examines various buildings in the sanctuary, and the more recent one, the Early Hellenistic stadium. 118 Excavations at the Cretan site of Kommos have yielded, in addition to Minoan remains, a sanctuary of the Greek (and Roman) period, of which the architecture and other finds are documented in the fourth Kommos volume. 119 Samothrace has been excavated by New York University almost continuously since 1938, with final reports appearing sporadically in the Samothrace series. Three volumes have been published on architecture in recent years. 120 The publications office of the American School of Classical Studies at Athens has now assumed responsibility for this series.121

The British School at Athens is active in research and publication in Greece, although much of its work is focused on the prehistoric period. Notable exceptions within the supplementary series to the *Annual of the British School at Athens (BSA)* are the publications of the Protogeometric building at Lefkandi, the seventh-century and later temples of Athena at Old Smyrna, and an archaic fort in Euboea. ¹²² The mission of the British School at Rome includes contemporary art and

architecture as well as the archaeology and culture of Italy. Although the latter subjects are represented by various publications, they are geographically oriented to northern rather than southern Italy.

The Austrian Archaeological Institute was among the earliest of the foreign schools in Athens. So, too, the Austrians have a long history of fieldwork in the Peloponnesos at Elis, Aigeira, and Lousoi. Their investigations were profiled recently in the proceedings of a symposium commemorating the 100th anniversary of the institute. 123 This publication is part of the Sonderschriften series, which also includes a monograph on the theater at Aigeira. 124 The journal of the institute, Jahreshefte des Österreichischen archäologischen Instituts in Wien (Ö]h), produces supplementary volumes that occasionally focus on Greek architecture. One has recently appeared on interior enclosure walls in Greek cities. 125 Austrian excavations conducted in the Sanctuary of Apollo on Aigina have resulted in two recent books in the Alt-Ägina series, which examine the temple, associated structures, and other monuments. 126

In southern Italy, Austrian archaeologists have done extensive work at Velia. Much of this is sponsored by the Austrian Academy of Sciences (Österreichischen Akademie der Wissenschaften) and published in the *AF* series. Recent volumes dealing with architecture, among other topics, include a discussion of architectural terracottas from houses, ¹²⁷ as well as papers presented at two conferences, one specifically on Velia¹²⁸ and another on connections between the Aegean and the western Mediterranean. ¹²⁹

On the coast of Asia Minor, longstanding Austrian investigations at Ephesos have yielded several new publications. A study of the archaic Temple of Artemis at Ephesos based on discoveries from the renewed excavations¹³⁰ and a reconstruction of the altar of the Artemision¹³¹ have appeared as separate parts of *Forschungen in Ephesos*, volume 12. Volume 13, part 2 documents the results of excavations in the Tetragonos Agora, which was laid out in the third century B.C.E.¹³² Additionally, a book on early architectural terracottas from

 $^{^{113}\}mbox{Bookidis}$ and Stroud 1997.

 $^{^{114}}$ Camp 2010.

¹¹⁵Camp and Mauzy 2009.

¹¹⁶See Boegehold (1995), Townsend (1995), and Miles (1998), respectively.

¹¹⁷Pfaff 2003.

¹¹⁸Birge et al. 1992; Miller 2001.

¹¹⁹ Shaw and Shaw 2000.

¹²⁰Lehmann and Spittle 1982; Frazer 1990; McCredie et al. 1992.

¹²¹The next to appear is Wescoat et al. (forthcoming).

¹²² See Popham et al. (1993), Cook and Nicholls (1998),

and Sapouna-Sakellaraki et al. (2002), respectively.

 $^{^{123}\}mbox{\sc Mitsopoulos-Leon}$ 2001; see also Kandler and Wlac 1998.

¹²⁴Gogos 1992.

¹²⁵Sokolicek 2009.

¹²⁶Hoffelner 1996, 1999.

¹²⁷Gassner 2003.

¹²⁸Krinzinger and Tocco 1999.

¹²⁹Krinzinger 2001.

¹³⁰Ohnesorg 2007.

¹³¹ Muss and Bammer 2001.

¹³²Scherrer and Trinkl 2006.

the sanctuary was recently published as a supplement to $\ddot{O}[h.^{133}]$

The Italian School of Archaeology focuses on both prehistoric and historic sites in Greece. Several recent publications have resulted from their work at Gortyna, including one on the acropolis sanctuary and another on the Hellenistic-period fortifications. ¹³⁴ The architectural development as well as other aspects of the Sanctuary of Asklepios at Lebena (Crete) is also the subject of a book. ¹³⁵

Since 1964, excavations at Eretria have been conducted by the Swiss School of Archaeology in Greece. Final reports are published in the *Eretria* series, which includes a number of recent volumes on architecture. These cover topics ranging from houses to the gymnasion, the theater, and Macedonian-type tombs. ¹³⁶ There is also a very useful recent guide to the site, originally produced in French with Greek and English translations. ¹³⁷

Other schools of archaeology have likewise released recent publications of work by their members. For the Finnish Institute at Athens, these include an important study of the height and form of the peristyle columns of the fourth-century Temple of Athena Alea at Tegea, ¹³⁸ as well as a compilation of sketches of architecture in Greece by early Finnish travelers. ¹³⁹ The investigation of the Temple of Athena Alea at Tegea has long been an interest of the Norwegian Institute at Athens, and the investigation of the peristyle columns from the fourth-century temple arose from that project. Recently, the Norwegian Institute has expanded its work in Arcadia, including the publication of a seminar on the region. ¹⁴⁰

Much fieldwork in the Mediterranean is of course carried out by nationals of that country, for whom such series are not the primary conduit for publication. An example is the Turkish investigations at the site of Old Smyrna, which were published by the Turkish Historical Society. Half By contrast, those of the British collaborators appeared in a supplementary volume of the *BSA*. Additionally, a colloquium discussing recent excavations in Greece, with papers largely by

CONFERENCES

Conferences and the proceedings that result from them have become increasingly popular means of exchanging ideas and information in the field of classical archaeology. Some are ad hoc, but others are held on a regular basis, although the location may vary. The second type is exemplified by the International Congress of Classical Archaeology, which draws participants from a number of countries to speak on topics with a geographic or, more recently, technical or methodological focus. ¹⁴⁶ Because of the general nature of the themes, however, Greek architecture may not be well represented.

The subject is given more emphasis in the periodic colloquia on ancient architecture that are organized in whole or part by the DAI in Berlin and published in the series *Diskussionen zur archäologischen Bauforschung*. Those volumes with a particular interest in the Greek world offer important insights and evidence for buildings and their components, techniques of construction, and settlements, planning, and theory. ¹⁴⁷ A

Greek nationals, was published in the series British Archaeological Reports. 143 When foreign excavators work directly with representatives of the host country rather than with an archaeological school, the sponsoring institution may bear responsibility for publication. Thus, Morgantina Studies, from Princeton University Press, provides the final reports of excavations initiated by that university at the Sicilian site of Morgantina. Volumes have already appeared on the kilns and on the typology and contents of archaic tombs, and other architectural topics are forthcoming. 144 Finally, some results are published in conjunction with archaeological organizations in the home country, such as the reports of the Danish Archaeological Expedition to Bodrum, which appear in the *Jutland Archaeological Society* series. The expedition's investigations of the Maussolleion at Halikarnassos, built for a foreign ruler but designed by a Greek architect, are documented in separate volumes that cover such topics as the foundations and the superstructure of the building.¹⁴⁵

¹³³ Schädler and Scheider 2004.

¹³⁴ See Johannowsky (2002) and Allegro and Ricciardi (1999), respectively.

¹³⁵Melfi 2007.

 $^{^{136}\}mathrm{See}$ Ducrey et al. (1993), Reber (1998), Mango et al. (2003), Isler (2007), and Huguenot (2008), respectively.

¹³⁷ Ducrey 2004.

¹³⁸ Pakkanen 1998.

 $^{^{\}rm 139}$ Pakkanen and Tuomi 2000.

¹⁴⁰Østby 2005.

¹⁴¹Akurgal 1983.

¹⁴²Cook and Nicholls 1998.

¹⁴³Stamatopoulou and Yeroulanou 2002.

¹⁴⁴Cuomo di Caprio 1981; Lyons 1996. Forthcoming volumes will cover the following subjects: archaic architecture by J. Kenfield, B.A. Barletta, and C.M. Antonaccio; Hellenistic (and Roman) houses by B. Tsakirgis; and the Hellenistic city plan and agora by M. Bell III et al.

¹⁴⁵Jeppesen 2000, 2002.

¹⁴⁶For the history of this conference, see http://www.aiac.org/ing/congresso_2008/history.htm.

¹⁴⁷ Of the recent volumes, vols. 4, 5, and 6 have been particularly concerned with Greek architecture (Hoepfner 1984; Hoffmann 1991; Schwandner 1996). A volume on light in architecture appeared this year (Schneider and Wulf-Rheidt 2011).

partner in this series, the Free University of Berlin, has also separately sponsored a number of symposia on Greek architecture, which are published in the series *Schriften des Seminars für Klassische Archäologie*. One on cult buildings of the Athenian Acropolis was mentioned previously. ¹⁴⁸ An earlier conference examined Hellenistic palaces. ¹⁴⁹ Another focused on Greek architecture from a political perspective. ¹⁵⁰ A fourth explored methods of lighting in Greek and later buildings. ¹⁵¹ More recently, the topic was the Greek agora. ¹⁵² Still another recent colloquium in Berlin, which examined imitations in ancient art, included contributions on Greek architecture. ¹⁵³ These events are extremely useful in highlighting the activities and views of their primarily German participants.

The Maison de l'Orient in Lyon, France, has been the site of other important conferences on ancient architecture, including one on temples and sanctuaries ¹⁵⁴ and another on sacrificial space, particularly altars. ¹⁵⁵ A colloquium sponsored by the French Institute for Anatolian Studies in Istanbul offered a series of stimulating papers on architectural workshops in the sixth-century Aegean world, from Anatolia to western Greece. ¹⁵⁶

The Istituto per la Storia e l'Archeologia della Magna Grecia organizes an annual conference on various themes involving western Greece and publishes the proceedings in a numbered series. ¹⁵⁷ A section of each volume is devoted to reports on archaeological activities, which often include the discovery or study of Greek buildings. Occasionally, longer presentations are given on particular aspects of Greek architecture, as those by Mertens on urbanism and architecture in Magna Graecia or on Ionic characteristics of western Greek architecture. ¹⁵⁸ Proceedings of a recent Italian conference in Venice offer an array of papers on architects, buildings, and cities in the Hellenistic world. ¹⁵⁹

Archaeological schools and institutes also hold conferences periodically. The French School at Athens

recently organized one on Delphi, which included contributions on Greek architecture, and another, along with the CNRS, on Hellenistic and Early Roman public buildings in Greece.¹⁶⁰ The Norwegian Institute at Athens, in conjunction with the Italian School of Archaeology at Athens, hosted a conference and exhibition that linked the three countries through its theme, Samian architecture in western Greece. The resulting publication, in both Italian and Greek, presents the work of several Italian scholars on Ionic temples at Syracuse, Locri, and Caulonia. 161 The American School of Classical Studies at Athens has sponsored a number of conferences in recent years. Two focused exclusively on architectural terracottas, 162 while two others, on Athens and Attica under the democracy and on architectural sculpture, included architecture among the topics.¹⁶³ Greek architecture was also profiled in a conference hosted by the American Academy in Rome on Greek baths, although this was too recent to yield a publication.

GENERAL STUDIES OF ARCHITECTURE

Few general books on architecture have appeared in recent years in English. Anglophone students and scholars still depend on such established works as Dinsmoor's The Architecture of Ancient Greece because of the wide range of buildings discussed. 164 Yet this book, last revised in 1950, does not include the results of recent scholarship, and Dinsmoor has been rightly criticized for his disparaging attitude toward monuments in western Greece, which he sometimes refers to as provincial or even "barbaric." 165 Lawrence's Greek Architecture covers fewer buildings but maintains its currency through periodic revisions, with the most recent in 1996 by Tomlinson. 166 The English translation of the book by Berve and Gruben, titled Greek Temples, Theatres, and Shrines, remains important for students because of its concise information and comprehensive illustrations,

¹⁴⁸ Hoepfner 1997.

¹⁴⁹Hoepfner and Brands 1996.

¹⁵⁰ Hoepfner and Zimmer 1993.

¹⁵¹ Heilmeyer and Hoepfner 1990.

¹⁵²Hoepfner and Lehmann 2007.

¹⁵³ Kyrieleis 2008; Wesenberg 2008.

¹⁵⁴ Roux 1984.

 $^{^{155}}$ Étienne and Le Dinahet 1991.

¹⁵⁶Des Courtils and Moretti 1993.

¹⁵⁷See their website (http://www.isamg.it/index.html) for details about the organization and their publications.

¹⁵⁸Mertens 1982, 2000, respectively.

¹⁵⁹ Malacrino and Sorbo 2007.

 $^{^{160}\}mbox{Jacquemin}$ 2000; Marc and Moretti 2001.

¹⁶¹ Costabile 1997. I wish to thank the editor, F. Costabile, and the then director of the Norwegian Institute at Athens, E. Østby, for giving me a copy of this important and well-

illustrated publication.

¹⁶² Winter 1990, 1994.

¹⁶³ See, e.g., Childs (1994) from the conference held in December 1992 and Scahill (2009) from that in November 2004.

¹⁶⁴ Dinsmoor 1950. As the title page states, his is a "revised and enlarged edition based on the first part of *The Architecture of Greece and Rome* by W.J. Anderson and R.P. Spiers." See also Anderson and Spiers 1902.

¹⁶⁵ In concluding his discussion of mainland architecture, Dinsmoor (1950, 75) states: "As we proceed westward among the colonies we find even more emphasis on the tendency toward ostentation, accompanied however by a certain amount of provincialism or 'cultural lag' and also, especially on the Italian mainland, by barbaric distortions resulting from the intermixture not only of colonists of various origins but also of native taste."

¹⁶⁶ Lawrence 1996.

although it is now dated. ¹⁶⁷ New publications include Tomlinson's own book, *Greek Architecture*, ¹⁶⁸ and Spawforth's introductory text, *The Complete Greek Temples*, ¹⁶⁹ both of which aim at a fairly general audience.

Authors writing in other languages have continued to produce comprehensive, and often detailed, expositions of Greek architecture. After his joint volume with Berve, Gruben published new editions of his contribution on Greek temples and sanctuaries, the last of which appeared in 2001. Two other German publications, by Knell and Müller-Wiener, cover a range of topics from planning to building types. Hellmann's three-volume set in French offers a discussion of principles as well as architectural forms and design. Recently, a large, thorough, and up-to-date tome on early Greek architecture to the fifth century has appeared in Italian.

Several scholars have focused on a more restricted body of material. One approach is to consider architecture of a certain period. Two excellent books on the Iron Age have been published in English by Paul Åströms Förlag.¹⁷⁴ These fill in gaps in the development of architecture by elucidating a period that was previously poorly known. A short volume in Italian by Tiberi treats selected classical monuments. 175 The Hellenistic period forms the subject of two other books, in German and English, respectively. 176 Other scholars examine the architecture of a particular region, as with Mertens' publication of western Greek buildings.¹⁷⁷ Sometimes the geographic concentration is combined with a chronological one. That is the approach taken in books on the Hellenistic architecture of Paros¹⁷⁸ and of Asia Minor.179

ARCHITECTURAL COMPONENTS AND CHARACTERISTICS

There is a long tradition in classical scholarship of assembling specific components or objects and studying them as a group. Building models have been treated in this way, in an attempt to discern characteristics of early architecture. ¹⁸⁰ Construction features may also

fall into this category, as demonstrated by studies that focus on the corbelled gate¹⁸¹ or the arched doorway.¹⁸² This method is especially profitable with certain architectural elements that develop or function somewhat independently from the buildings to which they belong. An example is provided by moldings and their decoration. For profiles, Shoe's books on mainland (1936) and western (1952) Greece remain the standard sources, despite their age.¹⁸³ There is no comparable source for decoration, although the leaf ornament has been investigated in a book by Altekamp.¹⁸⁴

Architectural supports represent another area where separate study has proven useful. Two books on the subject have appeared recently, one by Donos, which focuses specifically on columns and pillars, 185 and another by Kissas, which looks more generally at Attic statue and stele bases that include columns, 186 in both cases from the Archaic period. The topic is also addressed in an unpublished dissertation on votive columns from the Aegean Islands and the Athenian Acropolis.¹⁸⁷ These studies have identified distinctive characteristics of architectural supports and in some cases of architectural style. Indeed, an article by McGowan resulting from her dissertation traces the early development of the Athenian Ionic capital on the basis of its use for votive supports. 188 The Ionic capital is also examined in two recent books, one by Kirchhoff, which traces it from its origins to the fifth century, 189 and another by Theodorescu, which elucidates proportions and details. 190 Investigations of the Corinthian capital have likewise focused on its origin and use. These include a published thesis by Börner¹⁹¹ and an article by Scahill. 192 Column bases have received much less attention of late, but a book by Dirschedl on their typology is forthcoming.¹⁹³

The architectural orders, which are identified by distinctive columns and entablatures, continue to be a topic of discussion. The Doric order has stimulated the most interest. In the first of a two-volume set, Rocco defines its characteristics and traces its development over time. 194 Arguments for its origins have

¹⁶⁷Berve and Gruben 1963.

¹⁶⁸Tomlinson 1989.

¹⁶⁹Spawforth 2006.

¹⁷⁰Gruben 2001.

¹⁷¹ Knell 1988; Müller-Wiener 1988.

¹⁷²Hellmann 2002, 2006, 2010.

¹⁷³Lippolis et al. 2007.

¹⁷⁴Fagerström 1988; Mazarakis Ainian 1997.

¹⁷⁵Tiberi 1998.

¹⁷⁶Lauter 1986; Winter 2006.

¹⁷⁷Mertens 2006.

¹⁷⁸ Müller 2003.

¹⁷⁹Steele 1992.

¹⁸⁰Schattner 1990.

¹⁸¹Rathke 2001.

¹⁸²Dornisch 1992.

¹⁸³Shoe 1936, 1952.

¹⁸⁴Altekamp 1991.

¹⁸⁵Donos 2008. ¹⁸⁶Kissas 2000.

¹⁸⁷McGowan 1993.

¹⁸⁸McGowan 1997.

¹⁸⁹ Kirchhoff 1988.

¹⁹⁰ Theodorescu 1980.

¹⁹¹ Börner 1996.

¹⁹² Scahill 2009.

¹⁹³Dirschedl (forthcoming).

¹⁹⁴Rocco 1994.

been set out in dissertations by Howe and Klein, ¹⁹⁵ in the latter case on the basis of its geison. The frieze has been the subject of several recent articles by scholars such as Osthues, ¹⁹⁶ Kienast, ¹⁹⁷ Kyrieleis, ¹⁹⁸ and Wilson Jones. ¹⁹⁹ The Ionic order has generally received less attention. Rocco applies the same treatment to it in his second volume as he did to the Doric order in the first. ²⁰⁰ A book by Barletta focuses on its origins, along with those of the Doric order. ²⁰¹ Wilson Jones' monographic publication on this same topic is in preparation. Finally, the frieze has been studied by Felten, but primarily for its sculptural decoration. ²⁰²

Roofing components have attracted considerable attention in recent scholarship. Their often-distinctive material, specialized production, and frequent renewal justify studies that are separate from those of associated buildings. For roofs of terracotta, the manufacturing process has sparked interest among certain scholars.²⁰³ Yet most publications examine roofs typologically and/or geographically. Some focus on a particular component, as with a book on the painted antefixes from Gela²⁰⁴ and another on western Greek lion-head spouts.²⁰⁵ Others may look at entire roofs from a single site or area. These include studies of Corinthian architectural terracottas, ²⁰⁶ early roofs in the Peloponnesos, 207 and archaic Campanian roofs, many of which come from Greek sites.²⁰⁸ Architectural terracottas from Sicily have also been examined as a group.²⁰⁹ Less attention is paid to marble roofs, but Ohnesorg has recently produced a book on those reflecting the Ionic tradition.²¹⁰

Another approach is to consider the material over a wider geographic area but to limit it chronologically. This is done by Winter in her edited conference proceedings and book. The conferences, first on archaic and then on classical and Hellenistic Greek terracottas, appeared respectively as a fascicle and as a supplementary volume of *Hesperia*.²¹¹ Her book, published in the intervening period, covers architectural terracottas

throughout ancient Greece, although it is limited to the prehistoric through Archaic periods and organized according to regional systems.²¹²

The conference on architectural terracottas titled "Deliciae Fictiles" was initially oriented to central Italy except for a few papers that explored connections with the Greek world. In its second and third meetings, it expanded to encompass all of Italy through Magna Graecia and Sicily. The three *Deliciae Fictiles* volumes are thus an important resource for architectural terracottas from the Greek west.²¹³

Greek architects typically placed decoration on the tops of roofs. Moustaka discusses terracotta sculptures used in this way at Olympia. ²¹⁴ Danner has made several specialized studies of this category of material for both mainland and western Greece. His first book considered acroteria of archaic and classical Greece. ²¹⁵ Next, he explored a more specific topic, pedimental antefixes and equestrian kalypters, and a different geographic area, South Italy and Sicily. ²¹⁶ This was followed by a book on western Greek acroteria. ²¹⁷ Although pedimental decoration falls more appropriately into the realm of sculpture than architecture, Danner's examination of types used in the west demonstrates their differences from those of mainland Greece. ²¹⁸

Buildings, like freestanding and architectural sculpture, were also enlivened with paint. The study of such decoration has gone in and out of favor over the years but has become increasingly popular of late. Sculpture has received more attention than architecture, although some scholars have discussed color in association with the decoration of buildings. This was the case with Brinkmann's examination of the Siphnian Treasury frieze. ²¹⁹ In the publication of her Sather Classical Lectures on Greek architectural sculpture, Ridgway devotes a chapter to color, which focuses on sculpture but discusses buildings as well. ²²⁰ The proceedings of a 2000 conference that addressed color

¹⁹⁵ Howe 1985; Klein 1991b.

¹⁹⁶Osthues 2005.

¹⁹⁷ Kienast 2002.

¹⁹⁸ Kyrieleis 2008.

¹⁹⁹ Wilson Jones 2002.

²⁰⁰Rocco 2003.

²⁰¹Barletta 2001.

²⁰²Felten 1984.

²⁰³ See Rostoker and Gebhard (1981) and Sapirstein 2009.

²⁰⁴Castoldi 1998.

²⁰⁵ Mertens-Horn 1988.

²⁰⁶Heiden 1987.

²⁰⁷Cooper 1989.

²⁰⁸Rescigno 1998.

²⁰⁹Wikander 1986.

²¹⁰Ohnesorg 1993.

²¹¹Winter 1990, 1994.

²¹²Winter 1993.

 $^{^{213}\,}Rystedt$ et al. 1993; Lulof and Moormann 1997; Edlund-Berry et al. 2006.

²¹⁴Moustaka 1993.

²¹⁵Danner 1989.

²¹⁶Danner 1996.

²¹⁷Danner 1997.

²¹⁸Danner 2000, 2001, 2002.

²¹⁹ Brinkmann 1994. See his recent essay on sculpture, which also includes comments on architecture (Brinkmann 2008).

²²⁰ Ridgway 1999.

in Greek art include sections on architecture and architectural terracottas.²²¹ With increasing expertise in discerning the remains of color, we can expect more publications on this topic in the future.

INDIVIDUAL BUILDING FORMS

Even more popular is the emphasis on specific types of monuments. Temples received priority from the start of investigations and continue to hold a certain status because of their communal effort and relatively high expenditure. Thus, they form the subject of numerous articles and are frequently represented in volumes arising from the investigation of a site or the work of an archaeological school, as demonstrated by the publications already cited. An individual temple may also be the focus of a book published independently of a site-specific series. This is the case, for example, with recent studies of the archaic Temple of Artemis at Ephesos,²²² the Temple of Athena at Makistos (Greece),²²³ the Olympieion in Athens,²²⁴ and Temple M at Selinous.²²⁵ The goal of such works is to elucidate various aspects of a temple's architecture and its artistic and/or cultural context.

That context may include the traditions of the cities in which religious buildings were constructed. Barello's book on Caulonia discusses remains of architecture and its decoration at the site from the Archaic to Hellenistic periods, with particular emphasis on the 5th-century Doric temple. 226 Marconi places the archaic metopes from Selinous within early architectural traditions not only at their own site but also elsewhere. By arguing for a greater overall unity of buildings and their decoration and by linking the iconography of the metopes to local and inherited cults, he proposes a strong cultic expression in Selinuntine temples. 227

Scholars have also examined the functional relationship of temples to adjacent structures. Thus, Mark's study of the development and chronology of the Sanctuary of Athena Nike on the Athenian Acropolis includes not only the temple but also its altar and cult statue base. ²²⁸ While the papers from a 1995 symposium on the Athenian Acropolis focus on temples, their contents, and their decoration, they examine

other religious structures as well.²²⁹ Rhodes' book on the Acropolis unites the main buildings within shared themes of victory and procession.²³⁰ By taking a group of cult buildings as his subject, Rhodes is able to explore relationships and their meaning.

Given the emphasis on temples, one might expect considerable interest in altars. Indeed, various studies have appeared in the form of articles, but books are relatively rare. One important example is the recent volume of the Ephesos series, which describes and reconstructs the Altar of Artemis at Ephesos. 231 A short volume has recently appeared on the unusual altars (or supports) from Gela.²³² Ohnesorg's book looks more broadly at altars, specifically those from Ionic territory, and offers detailed descriptions and reconstructions.²³³ An important contribution is also made by the proceedings of a conference on sacrificial space.²³⁴ This conference assembled a number of prominent figures to discuss altars over a wide geographic area-extending beyond the borders of ancient Greece—as well as such issues as vocabulary and typology. Some papers rely on representations of altars in other media, an approach followed by Aktseli in her recent book.²³⁵ Yet much work still needs to be done to clarify the various types of altars, the development and geographic distribution of each type, and changing preferences over time.

Treasury buildings have likewise received few booklength studies and, as with articles, these tend to focus on specific examples or locations. Thus, one book examines the two treasuries, as well as the tholos, in the Sanctuary of Athena Pronaia at Delphi. ²³⁶ Another also discusses Delphic treasuries but includes those of both the Athena and Apollo sanctuaries. ²³⁷ A dissertation presents a more general study of this type of building, although it remains unpublished. ²³⁸

Another religious structure, the theater, has attracted more attention. A monograph devoted to a single theater is unusual, but several have appeared of late. Two focus on the Theater of Dionysos in Athens: one by Polacco offering an overview and another by Gogos considering its architectural development and function.²³⁹ The form of this theater is also considered by

²²¹ Tiverios and Tsiaphake 2002.

²²²Schaber 1982.

²²³ Nakases 2004.

²²⁴Tölle-Kastenbein 1994 (which met with mixed reviews).

²²⁵ Pompeo 1999.

²²⁶Barello 1995.

²²⁷ Marconi 2007.

²²⁸ Mark 1993.

²²⁹ Hoepfner 1997.

²³⁰Rhodes 1995.

²³¹ Muss and Bammer 2001.

 $^{^{\}rm 232}$ Panvini and Sole 2001.

²³³Ohnesorg 2005.

²³⁴Étienne and Le Dinahet 1991.

²³⁵Aktseli 1996.

²³⁶Ito 2004.

²³⁷ Partida 2000.

 $^{^{238}}$ Rups 1986. It should also be noted that K. Herrmann has worked extensively on the treasuries at Olympia.

²³⁹ Polacco 1990; Gogos 2008b.

Pöhlmann and others on the basis of archaeological evidence and the staging of ancient plays. ²⁴⁰ We have already mentioned Gogos' publication of the theater at Aigeira, and he has produced still another on that of Oiniadai. ²⁴¹ The theater on Delos has been documented in its various phases in the most recent volume of the *Délos* series. ²⁴² A book by Wiegand examines that at Soluntum and demonstrates its affinities with Hellenistic (theatral) architecture in Sicily. ²⁴³ Another Sicilian theater, at Syracuse, has been the subject of publications by Polacco, including one that provides support for the important observations of Anti. ²⁴⁴

Other books take a more regional approach. One elucidates characteristics of the western Greek theater in both Sicily and South Italy from the mid fourth to mid first centuries B.C.E.²⁴⁵ Theaters in Attica and the Peloponnesos during the Greek and Roman periods form the subject of two books. That by Bressan offers, in two volumes, a detailed catalogue of examples along with a morphological and cultural analysis.²⁴⁶ Burmeister's book, which appeared earlier, is more succinct and was followed by another that examined the Greek and Roman theater without geographic limits.²⁴⁷ Two additional publications consider the theater as a whole, exploring its physical, performative, and social aspects.²⁴⁸ Although a related structure, the odeion, is less well known from the Greek period, a recent book by Gogos examines its representatives, both Greek and Roman, in Athens.²⁴⁹

Some Greek building forms could have either a religious or civic function, depending on their location. It is thus difficult to make generalizations about them beyond their architectural similarities, which may explain their relative neglect in the literature. A case in point is the tholos. A book on round buildings from the Kerameikos cemetery demonstrates the variety of forms and functions and the difficulty of categorizing this type. ²⁵⁰ Seiler explores the development, typology, and function of the tholos more generally, but its exact purpose remains elusive. ²⁵¹ No comprehensive stud-

ies have been made of the stoa after that of Coulton, which falls chronologically outside the parameters of this essay.²⁵² Yet a book by Koenigs provides new evidence for one example, the Echo Stoa at Olympia.²⁵³ Other publications treat various aspects of this building form: a recent article traces its derivation and use, and a dissertation discusses the political purpose of certain stoas in coastal Asia Minor.²⁵⁴ The exedra, which could likewise be used in both religious and civic spaces, forms the subject of a book that examines its origins and development in the Hellenistic period.²⁵⁵ An especially neglected architectural form, the fountain house, received its first full study, including the elucidation of its types, in a 1983 book.²⁵⁶ This was followed in 2009 by the examination of a particular example, that of Arsinoë at Messene. 257

Interest in government and other purely civic buildings has been limited as well. Nevertheless, the Greek bouleuterion, along with the Roman curia, was discussed in a dissertation that has been published as *Das antike Rathaus*.²⁵⁸ Greek and Roman libraries are the topic of an edited volume that examines not only the architecture but also the contents, forms, and settings of these buildings.²⁵⁹

Only a small number of books have appeared on the Greek stadium. One by Romano examines the origins of this type, with particular focus on the Peloponnesos. ²⁶⁰ He had previously studied stadia in this region for his dissertation. ²⁶¹ A book by Miller discusses the Hellenistic stadium uncovered by his excavation team at Nemea. ²⁶² The problem of the starting mechanism of ancient stadia is addressed by Valavanis, with a translation and appendix by Miller. ²⁶³

Another athletic facility, the gymnasium, has fared somewhat better. The architectural form and its function are discussed very generally in a book on ancient athletics²⁶⁴ and are covered in more detail, specifically for the Hellenistic period, in the proceedings of an international conference held in 2001.²⁶⁵ Individual gymnasia at Samos,²⁶⁶ Olympia,²⁶⁷ and Eretria²⁶⁸ have

²⁴⁰Pöhlmann 1995.

²⁴¹Gogos 1992, 2009, respectively.

²⁴²Fraisse and Moretti 2007.

²⁴³Wiegand 1997.

²⁴⁴Polacco and Anti 1981.

²⁴⁵ Mitens 1988.

²⁴⁶Bressan 2009.

²⁴⁷Burmeister 1996, 2006.

²⁴⁸ Moretti 2001; Moraw and Nölle 2002.

²⁴⁹Gogos 2008a.

²⁵⁰ Koenigs et al. 1980.

²⁵¹ Seiler 1986.

²⁵²Coulton 1976.

²⁵³Koenigs 1984.

²⁵⁴See Kuhn (1985) and Seddon (1987), respectively.

 $^{^{255}\}mathrm{Th}\ddot{\mathrm{u}}\mathrm{ngen}$ 1994.

²⁵⁶Glaser 1983.

²⁵⁷Reinholdt 2009.

²⁵⁸Gneisz 1990.

²⁵⁹ Hoepfner 2002.

²⁶⁰Romano 1993.

²⁶¹Romano 1981.

²⁶² Miller 2001.

²⁶³Valavanis 1999.

²⁶⁴ Newby 2006.

²⁶⁵ Kah and Scholz 2004.

²⁶⁶ Martini 1984.

²⁶⁷Wacker 1996.

²⁶⁸ Mango et al. 2003.

received monographic publications in recent years. Such buildings may be located near or associated with others of related functions, which are also discussed in these publications. These include the palaestra at Olympia and a later (Roman) bath at Samos.

While Roman baths and bathing have received considerable attention in recent scholarship, Greek baths have been largely overlooked since the early study by Ginouvès.²⁶⁹ That situation seems to be changing, however. A book by Hoffmann, which originated in the author's dissertation, provides an exposition of development, types, locations, and chronology of Greek baths, along with a catalogue of sites.²⁷⁰ Yegül's discussion of ancient baths and bathing, while oriented to the Roman world, begins with the Greek bath and gymnasium. 271 Similarly, Manderscheid's bibliography of ancient baths and bathing incorporates a few pages on the Greek period.²⁷² The recent publication of a conference on baths and bathing in Egypt likewise includes contributions on Greek baths.²⁷³ Perhaps the best indication of the expanding interest in this subject is the conference held in spring 2010 at the American Academy in Rome, in which scholars presented evidence for Greek and Greek-type baths throughout the Mediterranean, from early times through the Roman Imperial period.²⁷⁴

Housing has become a particularly popular field of investigation in Greek architecture. Publications may be focused on a single site or on a broader area to elucidate general principles. In the former category are recent books on the classical houses at Halieis,²⁷⁵ on those of Classical and Hellenistic date at Eretria,²⁷⁶ and on Hellenistic houses at New Halos (Thessaly),²⁷⁷ Delos,²⁷⁸ and Pergamon,²⁷⁹ as well as at Soluntum²⁸⁰ and Iaitas (Monte Iato) in Sicily.²⁸¹ Publications with a broader perspective include a study of the Greek house in Calabria;²⁸² an edited volume on both Greek

and indigenous houses in South Italy and Sicily;²⁸³ an overview based on Athens, Olynthos, and Halieis;²⁸⁴ Nevett's examination of houses dating from the fifth to third centuries B.C.E. in several parts of the Greek world,²⁸⁵ as well as her recent discussion of both Greek and Roman houses and households;²⁸⁶ Pesando's synthesis of literary and archaeological evidence for the classical (and to a lesser extent, Hellenistic) Greek house;²⁸⁷ and this last author's more general survey over time.²⁸⁸ In addition, a substantial portion of volume 1 of the *Geschichte des Wohnens* is devoted to the Greek period.²⁸⁹

Some scholars have focused on particular types of houses. Kiderlen profiles large-scale urban examples, presumably belonging to the elite, from the Archaic period onward.²⁹⁰ Walter-Karydi discusses a comparable group of Late Classical houses.²⁹¹ Hellenistic palaces have been explored in four different publications, including a study initially presented as a dissertation,²⁹² two books,²⁹³ and the proceedings of a conference at the Free University of Berlin.²⁹⁴

In contrast to past practices, modern study of houses is not primarily typological or even strictly architectural. Typology may still play a role, as in Hoepfner and Schwandner's book on the planning of houses and cities.²⁹⁵ Yet most scholars use the evidence provided by the buildings to decipher the function of specific rooms and spaces and their role in the household and society. Such issues as domestic cult and the gendering of space are thus incorporated into studies of houses at specific sites as well as more generally. New areas of concern include the identification of industrial spaces and the examination of less wealthy houses or those outside the major centers.²⁹⁶ Discerning the use of space is, of course, easier with houses that were excavated fairly recently using new techniques, but it is also possible for those uncovered long ago where

²⁶⁹ Ginouvès 1962.

²⁷⁰ Hoffmann 1999.

²⁷¹Yegül 1992.

²⁷² Manderscheid 2004.

²⁷³ Boussac et al. 2009.

²⁷⁴ "Greek Baths and Bathing Culture: New Discoveries and Approaches," American Academy in Rome, 16–17 April 2010 (organized by S. Lucore and M. Trümper).

²⁷⁵Ault 2005.

²⁷⁶Reber 1998.

²⁷⁷Reinders and Prummel 2003.

²⁷⁸Trümper 1998.

²⁷⁹Wulf 1999.

²⁸⁰Wolf 2003.

 $^{^{281}\,} Dalcher$ 1994. See also Brem (2000) on the decoration of Peristyle House 1.

²⁸²Falcone 2009.

²⁸³D'Andria and Mannino 1996.

²⁸⁴ Morgan 2010.

²⁸⁵ Nevett 1999.

²⁸⁶ Nevett 2010.

²⁸⁷ Pesando 1987.

²⁸⁸ Pesando 1989. It should also be noted that Tsakirgis (forthcoming) is preparing a book titled *Houses and Households in the Greek World*.

²⁸⁹Hoepfner et al. 1999.

²⁹⁰ Kiderlen 1995.

²⁹¹Walter-Karydi 1998.

²⁹² Heermann 1986 (originally presented as a thesis for Friedrich-Alexander-Universität Erlangen-Nürnberg).

²⁹³ Nielsen 1994; Kutbay 1998.

²⁹⁴ Hoepfner and Brands 1996.

²⁹⁵ Hoepfner and Schwandner 1986, 1994. This approach is debated, however.

²⁹⁶As in the papers assembled in Ault and Nevett 2005.

good records were kept. Thus, Cahill has extracted considerable information about human activities from the houses at Olynthos.²⁹⁷

Although fortifications are likewise associated with the city, they have generated considerably less interest. Discussions of them tend to be oriented to a single site or political unit. The first volume in the series on Halieis concerns its fortifications as well as adjacent structures.²⁹⁸ A specific study has also appeared on those of Leontinoi in Sicily.²⁹⁹ Mertens has taken a somewhat broader perspective at Selinous, where his publication of the walls and excavation finds also includes a section on the development of the city.³⁰⁰ Karlsson expands the geographic focus of Sicilian fortifications to the entire territory of Syracuse.³⁰¹ An even larger area, South Italy, is examined in another study on Late Classical and Hellenistic fortifications. 302 Few books, however, aim for an overview of this building type. A recent work looks at enclosure walls of Greek cities, although specifically interior ones.³⁰³ Another examines fortifications in the eastern Mediterranean from the mid fourth century to the Late Hellenistic period.³⁰⁴ A new book by Frederiksen also focuses on city walls from a specific period, 900-480 B.C.E., but across the Greek world. 305 The most general treatment of the topic is by Adam, who provides an introduction to Greek military architecture from Mycenaean through Hellenistic times.³⁰⁶

Monumental tombs are relatively rare in Greek architecture and accordingly also in the literature. As already noted, the Kerameikos in Athens has produced three round funerary structures, the earliest of which dates to the Archaic period. Tet large-scale tombs achieved their greatest popularity in Hellenistic times. Those from Macedonia have received particular attention in recent years. Others of Macedonian type have been identified at Eretria and published in the series from that site. Tombs in Alexandria (Egypt) extend from the Hellenistic period into Roman times and reflect a mixture of traditions, as elucidated by Venit. In his book, Fedak takes a broad approach to the study of monumental funerary architecture, both

chronologically and geographically, but places an emphasis on Hellenistic Asia Minor.³¹¹

THE BROADER CONTEXT OF ARCHITECTURE: SETTLEMENTS AND SANCTUARIES

Scholars have increasingly looked beyond individual buildings to larger complexes and the physical and functional relationships they reflect. The agoras and marketplaces of ancient cities have received particular attention. Ongoing publication of monuments within the Athenian Agora has already been noted. The complex known as the Agora of the Italians on Delos forms the subject of a book examining not only the architecture and its function but also the historical development of the site. ³¹² In addition, the Greek agora was the subject of a conference that discussed various examples and offered general considerations. ³¹³

Interest in the relationships of buildings is manifested particularly in studies of city plans. Some of these focus on specific locations, as in a book by Müth on Late Classical and Hellenistic Messene³¹⁴ and another by Goette on settlement patterns in the deme of Sounion.³¹⁵ Others aim for a broad overview. Thus, papers from a conference on ancient settlements examine developments throughout the Mediterranean.³¹⁶ One scholar who has long explored urban development is Martin, and several of his articles on urbanism as well as various aspects of architecture have proven sufficiently enduring to be collected in a book published in 1987.317 Another is Tomlinson, whose book examines building types and functions and then traces the development of several Greek cities.³¹⁸ The general book by Owens also takes a concrete approach in its account of town planning as it evolved in the Greek as well as Etruscan and Roman worlds.319

There is a natural affiliation between houses and their urban setting, which encourages scholars to examine both in a single publication. This is the case with Lang's study of the structure and development of early Greek settlements. The methodology may also be similar, moving beyond the architecture to its social context. Thus, a book on Olynthos uses the evidence

²⁹⁷Cahill 2002.

²⁹⁸McAllister 2005.

²⁹⁹Rizza 2000.

³⁰⁰ Mertens 2003.

³⁰¹ Karlsson 1992.

³⁰² Sconfienza 2005.

³⁰³ Sokolicek 2009.

³⁰⁴ McNicholl 1997.

³⁰⁵Frederiksen 2011.

³⁰⁶ Adam 1982.

³⁰⁷ Koenigs et al. 1980.

³⁰⁸E.g., as discussed by Andronikos 1984; Miller 1993.

³⁰⁹ Huguenot 2008.

³¹⁰Venit 2002.

³¹¹ Fedak 1990.

 $^{^{\}rm 312}$ Trümper 2008.

³¹³Hoepfner and Lehmann 2007.

³¹⁴ Müth 2007.

³¹⁵Goette 2000.

³¹⁶Schwandner and Rheidt 1999.

³¹⁷Martin 1987.

³¹⁸ Tomlinson 1992.

³¹⁹Owens 1991.

³²⁰Lang 1996.

of domestic architecture broadly to gain insight into social organization.³²¹ In Haus und Stadt im klassischen Griechenland, the authors are concerned mainly with the planning of certain classical and Hellenistic cities but find the same emphasis on regularity in regard to house types, which they attribute in both cases to political and social motivations.³²² That volume was the first in the series Wohnen in der klassischen Polis. The second, the proceedings of a conference, likewise examines urban development in political terms, specifically, the emergence of democracy. 323 A conference sponsored by the Free University of Berlin that highlighted political aspects of Greek architecture has already been mentioned.324 Such broad themes are addressed as well in the proceedings of a conference on domestic space and society in the Mediterranean through late antiquity.325

In examining the city as a reflection of society, several scholars have shifted their focus away from architecture. Such investigations provide critical background information for the monuments, but because their evidence is more archaeological and historical, they will be mentioned only briefly here. The Acts and Papers series of the Copenhagen Polis Centre, along with the recent book by the center's director, Hansen, fall into this category. 326 Nevertheless, the center's publications occasionally include studies of Greek architecture. In an Italian volume, various authors examine constructions of individual Greek cities with the aim of setting them in their social context. 327 A general book on the ancient city notes specific building forms (houses, temples, theaters) in its reconstruction of life in Athens (and Rome).328

In addition, there has been much more scholarly interest in the countryside and its relationship to the city, but again largely from a social and political perspective. The countryside of Metaponto in South Italy offers an excellent example of the fruit of such investigations. This interaction is explored more broadly, for both the Greek and Roman worlds, by a series of papers that place particular emphasis on economic factors. The solution of the scholar papers and the solution of the sol

Sanctuaries may also be examined in the context of cities. In explaining the rise of the Greek city, de Polignac argues for the importance of the (primarily rural) sanctuary as a way of defining territory and creating social identity.³³¹ His emphasis on the social and political function of cult centers has had a considerable impact on subsequent thinking, as attested particularly by a series of essays appearing as a response to his book a decade after its initial publication.³³²

Some recent books have focused on individual sanctuaries. These include a relatively short, but useful, account of the Sanctuary of Hera at Foce del Sele (South Italy).333 Buildings and roofing systems uncovered in the sacred precinct of Santa Venera at nearby Paestum are discussed in an edited volume.334 At the North African site of Cyrene, architectural changes in the Sanctuary of Demeter and Persephone are traced over centuries and used, along with other material, to elucidate rituals.335 A similar approach is taken by Bookidis and Stroud, whose examination of the precinct of these deities at Corinth demonstrates the character and significance of ritual dining in the Greek period.336 The architectural remains and other finds in the Sanctuary of Zeus Soter in Megalopolis are discussed in a 2009 book.337 Publications of Italian investigations at two sanctuaries on Crete and the French work in the Sanctuary of Poseidon and Amphirite at Tenos have already been mentioned. Étienne, who participated in the Tenos publications, also coedited a collection of essays devoted to architecture in the sanctuary at Claros.338

Other books examine several sanctuaries within a city or region. At Akragas, in Sicily, recent works by De Miro look at both urban and extra-urban sanctuaries in terms of their buildings, dedications, and history. 339 Regional studies have considered Calabria in general, 340 specifically rural sanctuaries in the same area, 341 and one group, archaic extra-urban locations, in Magna Graecia as a whole. 342 A book on early Arcadian sanctuaries includes architectural remains among the various types of finds. 343 Scott offers a new—spatial—perspective on the physical environment, buildings,

³²¹ Cahill 2002.

³²²Hoepfner and Schwandner 1986, 1994.

³²³ Schuller et al. 1989.

³²⁴Hoepfner and Zimmer 1993.

³²⁵Westgate et al. 2007.

³²⁶Hansen is widely known for his interest in various aspects of the Greek city-state. See his recent book (Hansen 2006).

³²⁷Greco 1999.

³²⁸ Connolly and Dodge 1998.

³²⁹ See Carter 1998, 2006.

³³⁰Rich and Wallace-Hadrill 1991.

³³¹ de Polignac 1995.

³³²Alcock and Osborne 1994.

³³³Greco 2001.

³³⁴Pedley 1993.

³³⁵ White 1993.

³³⁶ Bookidis and Stroud 1997.

³³⁷ Lauter-Bufe 2009.

³³⁸ Étienne and Varène 2004.

³³⁹ De Miro 2000, 2003.

³⁴⁰Lattanzi et al. 1996.

³⁴¹ Genovese 1999.

³⁴²Leone 1998.

³⁴³ Voyatzis 1990.

and dedications of the well-known sanctuaries of Delphi and Olympia.³⁴⁴

The sanctuary in general, with an emphasis on locations, functions, and contents, is the subject of a collaborative volume, *Le sanctuaire grec.*³⁴⁵ The nearly contemporary publication, *Greek Sanctuaries: New Approaches*, likewise brings together essays by well-known scholars, who discuss particular sanctuaries and their functions.³⁴⁶ The same editors were previously involved in the publication of a conference on early cult practices that also included presentations on temples and altars.³⁴⁷ Pedley's book offers a more synthetic approach, however, in examining individual sanctuaries by type and extracting general principles.³⁴⁸ Similarly, Edlund analyzes examples in Italy in relation to both natural and urban settings, and she compares Etruscan vs. Magna Graecian traditions.³⁴⁹

ARCHITECTS AND THE PROCESS OF CONSTRUCTION

Scholars have continued to value the information on Greek architecture that we have inherited from the ancients. Vitruvius' treatise, the only one on architecture preserved from antiquity, has received considerable attention of late. This includes new translations into English, by Rowland, 350 and into French, with extensive commentary, by several scholars, who devote one volume to each book.351 Gros was solely responsible for volumes 3 and 4, which are of particular interest for Greek architecture. Vitruvius' text has been examined by Knell for his architectural theories, especially in regard to temples and houses, 352 and by several authors from various perspectives in the proceedings of a colloquium that he coedited. 353 Although Vitruvius' reliability for information on Greek architecture has been debated, he still finds defenders.³⁵⁴

Besides Vitruvius, other literary and inscriptional sources preserve names and works of certain architects, and this information has now been assembled in two different dictionaries. One focuses exclusively on architects of the Archaic and Classical periods. 355 The other, comprising two volumes on ancient artists, includes architects among them.³⁵⁶ In addition, a recent encyclopedia of ancient natural scientists offers some entries on architects.357 Nevertheless, debates continue regarding such issues as the attributions of work, as with Kallikrates, 358 or the architect's distinctive design concepts, as with Iktinos. 359 Even for an architect whose attributions are more secure, as Hermogenes, enough remains unresolved to warrant a colloquium.³⁶⁰ Moreover, scholars are no longer so confident, as was Dinsmoor with his proposed "Theseum architect," that similarities among buildings betray the hand of a single master.361

Relatively little is known about the education of ancient architects and the process by which they worked. These topics were examined many years ago by two scholars with differing points of view, Burford and Coulton. More recently, both have contributed summaries of their ideas to the *Dictionary of Art*, which, although necessarily brief, are nevertheless important. Hellmann deals with these issues in some depth in the first of her three volumes on Greek architecture, and others address various aspects of them in papers from a conference in Strasbourg. A new book by Senseney examines the design process through the evidence for technical drawing.

Numerous studies have explored the principles of design, usually in conjunction with a specific building or site. Thus, Bell proposes that the dimensional system of the Temple of Zeus Olympios at Sicilian Akragas was based on Pythagorean principles.³⁶⁷ Höcker also chooses Akragas, one of the most productive sites of the time, as the subject of his investigation of fifth-century temples.³⁶⁸ In separate articles, both Wilson Jones and Waddell look more broadly at Doric temples from the

³⁴⁴ Scott 2010.

³⁴⁵ Schachter 1992.

³⁴⁶ Marinatos and Hägg 1993.

³⁴⁷ Hägg et al. 1988.

³⁴⁸ Pedley 2005. See also Emerson (2007) for another, but more general, book on the topic, with particular emphasis on the Acropolis.

³⁴⁹Edlund 1987.

³⁵⁰ Rowland 1999.

³⁵¹ Fleury et al. 1969-2009.

³⁵² Knell 2008.

³⁵³ Knell and Wesenberg 1984.

³⁵⁴ E.g., Wesenberg 2008.

³⁵⁵ Svensen-Evers 1996.

³⁵⁶Vollkommer 2001, 2004.

³⁵⁷ Keyser and Irby-Massie 2008.

³⁵⁸ E.g., Dinsmoor 1996.

 $^{^{359}}$ Winter 1980. See also Cooper (1996a, 369–79) for the architect and attributions to him.

³⁶⁰ Hoepfner and Schwandner 1990.

 $^{^{361}\,\}mathrm{Dinsmoor}$ 1950, 180–83. See the response from Miles 1989, 223–26.

³⁶² Burford 1969; Coulton 1977. See also the discussion of the fourth-century architect by Eiteljorg 1973.

³⁶³Burford 1996a, 1996b; Coulton 1996.

 $^{^{364}}$ Hellmann 2002, esp. 32–120.

³⁶⁵Université des sciences humaines de Strasbourg 1985.

³⁶⁶Senseney 2011.

³⁶⁷Bell 1980.

³⁶⁸ Höcker 1993.

fifth century B.C.E. onward and present slightly different arguments for a modular system based on the width of the triglyph. ³⁶⁹ Others have accepted such a system but assume it was introduced at a later date.

An important factor in elucidating design is metrology, the details of which have long been a subject of controversy. The recent discovery of the Salamis metrological relief has made a major contribution to this topic, one that will certainly be mined further in the years to come. ³⁷⁰ One of the prominent figures in this field was de Waele, whose book examined the metrology of the Athenian Propylaea. ³⁷¹ Fittingly, a memorial volume published in his honor includes an article on the Attic foot. ³⁷²

Scholars have also been interested in determining the means by which architects transmitted their designs. There is very little indication of preparatory drawings of the type used today. Instead, the account of the Arsenal of Philo may suggest that architects could describe the essential features of their buildings in words and only needed visual representations, such as drawings or models, for details.³⁷³ The elucidation of architectural vocabulary, as in a book by Hellmann, thus takes on particular importance.³⁷⁴ This scenario is supported by the recent discovery of drawings from the Temple of Apollo at Didyma and some other structures. Didyma provides the most complete evidence, with the walls of the adyton bearing incised designs for the profile of the column base and the fluting and entasis of the shaft, for the walls and entablature of the temple, and for the entablature of the interior naiskos.³⁷⁵ Lines on the platform guided construction of the ground plan. These drawings have been described by Haselberger as the "missing link" between written documents and completed buildings.³⁷⁶ A partial construction could also serve as a model, according to Wesenberg, who identifies a section of the Tunnel of Eupalinos on Samos as illustrating the direction of that to come.377

Progress is being made as well in understanding the construction process. Korres studied the quarrying and transporting of blocks for the Parthenon, and he presents his findings in two books.³⁷⁸ Kalpaxis provides an interesting discussion of unfinished masonry in buildings beginning in the sixth century B.C.E.³⁷⁹ Refinements have been a topic of interest for several scholars. Haselberger has explored them in his own writings,³⁸⁰ and he edited the proceedings of a symposium on refinements, particularly curvature, which included a number of other presenters.³⁸¹

LOOKING AHEAD: WHAT STILL NEEDS TO BE DONE

As noted throughout this essay, the study of Greek architecture continues to be dependent on detailed documentation of buildings and their elements. There are many significant structures for which the documentation remains inadequate; these offer opportunities for work by future scholars. Some have been mentioned here, such as the Temple of Hera II (the so-called Temple of Poseidon) at Paestum. Other western Greek examples include the equally well-preserved Temple of Concord at Akragas and the enormous Altar of Hieron at Syracuse. In Athens, a new study of the Temple of Hephaistos,382 which likewise ranks among the best-preserved temples in the Greek world, could expand our knowledge not only of this building but also of fifth-century Doric architecture in Attica and in Greece more generally.

Once a building is thoroughly recorded, it can be placed within its architectural context by comparison with other structures. This line of investigation requires a large body of evidence and a continual reassessment of it. Changes in the accepted chronology of a critical building will have repercussions on others. The recent redating of the "Late Archaic" Temple of Aphaia at Aigina to just after 480 B.C.E. is a case in point, since it demands a rethinking of post-Persian architectural developments and styles. ³⁸³ Moreover, if, as Stewart suggests, its predecessor was destroyed by the Persians, ³⁸⁴ its (re)construction would violate the terms established by the presumed, although problematic, Oath of Plataia. While the authenticity of that oath is much debated, it is often cited as an explana-

³⁶⁹Wilson Jones 2001; Waddell 2002.

³⁷⁰ Dekoulakou-Sideris 1990; Wilson Jones 2000. See also Haselberger (1996) for a discussion of measurement and modules.

³⁷¹ de Waele 1990.

³⁷²Eiteljorg 2005.

³⁷³Coulton 1983, esp. 455–56.

³⁷⁴ Hellmann 1992.

³⁷⁵ Haselberger 1983, 1991 (with previous bibliography).

³⁷⁶ Haselberger 1997.

³⁷⁷Wesenberg 2007.

³⁷⁸Korres 1995, 2000.

³⁷⁹ Kalpaxis 1986.

³⁸⁰ Haselberger 2005.

³⁸¹ Haselberger 1999.

³⁸²The primary publication of this temple is by Koch 1955. Despite his work, questions remain about the building, especially its interior configuration, date of construction, and relationship to other temples in Attica.

³⁸³ Gill 1988.

³⁸⁴ Stewart 2008, esp. 591-97.

tion for the apparently lengthy pause in construction following the Persian Wars, an assumption that merits reconsideration.

Discoveries of buildings from neglected geographic locations and ever earlier and later periods are likewise challenging accepted canons. Archaism in Greek architecture, which has been explored briefly by Knell, 385 demands further consideration in this context. Similarly, despite the continued importance of Shoe's work on molding profiles, scholars would profit from an updated and more expansive study.³⁸⁶ The decoration of moldings, which often deviates from presumed standards, must also be reexamined. Recent attention to ancient roofs has yielded promising results, which in the future should lead to further elucidation of individual examples, their typology, workshops and regional associations, and manufacture. So, too, as scholars gain a deeper understanding of the design and construction process, they will be increasingly able to decipher the intent of the architect and to evaluate the demands of the project.

Increasingly, the study of Greek architecture aims to place buildings into not only their architectural but also their social context. We have noted this for houses and settlements as well as for religious buildings and sanctuaries. Modern excavators have assisted in these goals by the detailed recording of finds. Yet scholars can also glean much information as to the use of rooms and buildings from older records and even ancient inventories. As demonstrated by Harris' studies of the treasures in the Parthenon and Erechtheion, ³⁸⁷ envisioning the contents of these buildings makes them come alive. As more scholars direct their attention to the role Greek architecture played in the community, we can expect to develop a deeper understanding of both the structures and the society that built them.

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 - ³⁸⁵ Knell 1993.
- ³⁸⁶As in the chapter by Edlund-Berry (2000) added to the revised edition of Meritt's book.

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³⁸⁷ Harris 1996.

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